These and other features of the method of the subject disclosure will become more readily apparent to those having ordinary skill in the art from the following detailed description of preferred and exemplary embodiments.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT(S)

Referring now to the drawings, Figures 1-12 illustrate an embodiment of a dielectric interface modular insert 10 in accordance with the present disclosure. Insert 10 has an upper portion 12 seated on a lower portion 14, with electrically conductive lead frames 16, 18, 20 , 22, 24, 26, 28 and 30 being disposed between. Preferably, upper portion 12 and lower portion 14 are fabricated from a low dielectric material, such as plastic.

Insert 10 contains terminals having 8 lead frames in accordance with most standard wiring formations, such as the T568B and T568A style RJ45 plugs. The TIA/EIA commercial building standards have defined category 5e and 6 electrical performance parameters for higher bandwidth (100 up to 250MHz) systems. In category 5e and 6, the TIA/EIA RJ45 wiring style is the preferred formation and is generally followed throughout the cabling industry.

Lead frames 16 through 30 are engaged in channel slots 32 with cut outs in upper portion 12 and lower portion 14. The cut outs are provided so as to permit contact portions 34 on each lead frame to be exposed along upper surface 36. Slots 32 also hold the lead frames 16 through 30 in position prior to being inserted into the PCB. In particular, lead frames 16, 20, 24 and 28 are associated with slots 32 in upper portion 12 and lead frames 18, 22, 26 and 30 are associated with slots 32 in lower portion 14.

Lead frames 16 through 30 traverse insert 10 from outer end 38 to inner end 40 and are substantially parallel with respect to each other. Each lead frame 16 through 30 is

substantially elongated with curved or bent body portions 33, including contact portion 34, a first end portion 41 and an electrical connector pin 42 at opposing second end portion 35. Connector pins 42 extend from inner end 40 and may be mated with other components or cables. Lead frames 16 through 30 are substantially parallel and spaced in their engagement so that contact portions 34 correspond with leads in a RJ45 plug (shown in Figures 12 and 13). Thus, the first pair of a T568B four-paired plug would align with lead frames 22 and 24, the second pair with lead frames 16 and 18, the third pair with lead frames 20 and 26, and the fourth pair with lead frames 28 and 30.

Referring now to Figure 2, upper portion 12 further includes a curved support ramp 44 which extends under a portion of lead frames 16, 20, 24 and 28 for, among other things, supporting and increasing the flexibility of the lead frames. Similarly, lower portion 14 further includes a ramped support portion 46 which extends under a portion of lead frames 18, 22, 26 and 30. As also illustrated in Figure 11, channel guilds 48, 50, 52, 54, 56, 58, 60 and 62 open along the surface of inner end 40 on lower portion 14 and engage ends 41 of lead frames 16 through 30. Channel guilds 48, 50, 52, 54, 56, 58, 60 and 62 correspond to lead frames 16, 18, 20, 22, 24, 26, 28 and 30, respectively.

Curved body portions 33 of lead frames 16 through 30 are positioned substantially parallel with respect to each other and are spaced to mate with a standard FCC RJ45 plug. At end 40 having connector pins 42, lead frames 16 through 30 are uniquely positioned relative to prior devices, due to the offset angling that advantageously reduces unwanted noises according to the present disclosure.

In preferred embodiments of the present disclosure, exemplary dimensional characteristics are as follows:

- Preferably, in the upper portion 12, the distance between lead frame 28 and 24 is about 0.190 inch, the distance between lead frame 24 and 20 ranges from

about .050 to .060 inches, and the distance between lead frame 20 and 16 is about 0.1 inch.

- Preferably, in the lower portion 14, the distance between lead frame 30 to 26 is about 0.1 inch, the distance between lead frame 26 to 22 ranges from about .050 to .060 inches, and the distance between lead frame 22 to 18 is about 0.190 inch.
- Preferably, the distance between pins 42 from the lead frames in the lower portion 14 to the lead frames in the upper portion 12 is at least about 0.1 inch. This advantageous arrangement serves to reduce the pair to pair noise, which is generally introduced to the system by the TIA/EIA T568B/A plug, among other things.

Lead frames 30, 26, 22, and 18 of insert 10 are designated ring **R'** (i.e., negative voltage transmission) and lead frames 28, 24, 20, and 16 are designated tip **T'** (i.e., positive voltage transmission) polarity. For T568B category 5e and 6 frequencies, unwanted noise is induced mainly between contacts 26, 24, 22, and 20, and minor unwanted noises are introduced between contacts 18 and 20 as well as contacts 26 and 28.

Lead frames 16 through 30 are electrically short in reference to the wavelengths up to 250 MHz. According to the present disclosure, lead frames 16 through 32 optimally affect the created noise as close to the source as possible to reduce noise phase offsets and create a proper balance of the noises created by the modular plug. The offset regions are affected by the distance of compensation reactances to the original noise reactances. Thus, the further away from the source of the noise signal, the greater the offset will be. Re-balancing the original signal to remove the noise signal is best achieved by using a signal of opposite polarity than the noise signal. According to the present disclosure, an optimal point for creation of a re-balancing signal is within 0.2 inches of the noise creation region because such distance generally provides equal magnitude and phase to the original negative noise region, among other things.